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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,556	09/02/2003	Bum-Gee Back	YOM-0051	3225
23413	7590	10/03/2005		
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			EXAMINER HU, SHOUXIANG	
			ART UNIT 2811	PAPER NUMBER
DATE MAILED: 10/03/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/653,556	Applicant(s) BAEK ET AL.	
	Examiner Shouxiang Hu	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4,8-10 and 12-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,8-10 and 12-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 8-10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US 2001/0019126) in view of Lee (US 2002/0041347) and/or Tseng (US 20020052058).

Kim discloses a contact structure in a thin-film transistor display device (Fig. 15; also see Paragraphs 0027 and 0028), comprising: a lower conductive film (30; it is naturally dry-etchable as it is formed of Cr) and an upper conductive film (32; formed on the lower film and including Al alloy) in a gate conductive layer formed on a insulating substrate (200), the upper film having edges located on the lower film; an insulator (42) having a contact hole exposing at least a portion of the lower film (at the gate pad portion); and a transparent pixel electrode layer (44, including 44a, 44b and/or 44c) formed on the insulator and contacting the lower film and the upper contact film through the contact hole.

Although Kim does not expressly disclose that the transparent pixel electrode layer can be formed of IZO, one of ordinary skill in the art would readily recognize that

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IZO is a commonly used material for forming a good transparent conductive pixel layer, as evidenced in Lee (see Paragraphs 0011 and 0041).

Although Kim does not expressly disclose that the contact hole can be big enough so that the transparent pixel electrode layer can contact the top surface of the the upper conductive film in the gate conductive layer, one of ordinary skill in the art would readily recognize that, as evidenced in Tseng (see the cover page figure), a direct contact in sufficient areas between the top surface of the gate conductive layer (46) and the transparent pixel electrode layer (58a) are desirable for sufficiently reduce the contact resistance therebetween.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the IZO pixel layer into the device of Kim with the contact hole being formed big enough so as to allow the transparent pixel electrode layer to contact the top surface of the upper conductive film in the gate conductive layer, per the teachings of Tseng, so that a LCD device with a pixel layer having good transparency, and/or good conductivity, and/or with improved material choice and/or flexibility, and with reduced contact resistance between the top surface of the upper conductive film in the gate conductive layer and the transparent pixel electrode layer would be obtained.

Regarding claims 3 and 12, it is noted that at least two sides of the gate pad stricture is commonly symmetric in the art, as evidenced readily in the prior art such as Ahn et al. (US 6,338,989; see the gate pad 41 in Fig. 3).

Regarding claims 8-10 and 12-15, the device of Kim further includes: a gate insulating layer (34); a semiconductor layer (36); a data conductive layer (38 and 40); a passivation layer (the insulator 42); and a drain electrode (41b).

Regarding claim 14, it is noted that the thickness of a refractory metal (Cr) layer in a gate electrode layer such as the one of Kim is an art recognized parameter of importance subject to routine experimentation and optimization, and that the recited thickness of about 500 Angstroms is well within the art commonly recognized range in such a gate electrode layer.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-4, 8-10 and 12-15 have been considered but are moot in view of the new ground(s) of rejection.

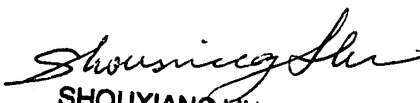
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH  
September 27, 2005

  
SHOUXIANG HU  
PRIMARY EXAMINER